Remarks

The Office Action mailed 3 December 2001 has been received and reviewed.

Applicants respectfully draw the Examiner's attention to line 1 on page 2 and to the header on pages 2-4. There is no amendment dated 11/15/99 in the present application. The present application is a divisional of Serial No. 08/949,903, the divisional application filed May 24, 2000. In the divisional application, claims 1-10 and 46-48 were cancelled. Additionally, the header on pages 2-4 of the present Office Action indicate the Application/Control Number as 08/949903. This is the Serial Number of the parent application. The present Application/Control Number should be indicated as 09/577,551.

Claims 11, 12, 16, 17, 22, 34, 37, 39, and 43 having been amended, and claims 14 and 15 having been cancelled, the pending claims are claims 11-13, 16-45, and 49-52.

Claim 11 has been amended to recite a coating a polyurethane ink composition on an elastomeric substrate. Support for this claim is found in the specification at page 7, line 31, to page 8, line 3, page 8, lines 12-14, page 9, lines 16-17, and page 12, lines 26-28.

Claim 12 has been amended to recite a water-based polyurethane-containing ink composition. Support for this amendment is found in the specification at page 8, lines 12-14.

Claim 16 has been amended to recite an elastomeric substrate, and dependent claims 17, 34, 37, and 43 have been amended to provide proper antecedent basis. Claim 22 has been amended to correct a grammatical error.

Claim 39 has been amended to recite limiting abrasion of ink on an elastomeric bandage.

No new matter has been added as a result of these amendments.

Reconsideration and withdrawal of the rejections in view of the above amendments and the comments provided below are respectfully requested.

The 35 U.S.C. §102 Rejection

The Examiner rejected claims 11, 13, 15-21, 23, 24, 25-27, 30-33, and 39-43 under 35 U.S.C. §102(b) as being anticipated by Davey et al. (U.S. Patent No. 5,162,141). Claim 15 having been cancelled renders the rejection of this claim moot. Applicants respectfully traverse the rejection of claims 11, 13, 16-21, 23, 24, 25-27, 30-33, and 39-43.

The present invention is directed to methods of coating urethane polymer-containing ink compositions in an imagewise fashion onto an elastomeric substrate, preferably an elastomeric bandage. Preferably, the methods provide limited abrasion and/or improved durability of the ink composition applied in an imagewise fashion. The invention is also directed to an elastomeric bandage including a urethane polymer-containing ink composition applied thereon in an imagewise fashion.

The polymeric sheets of Davey et al., on the other hand, neither teach nor suggest an image applied to a substrate that includes a urethane polymer-containing ink composition. The ink compositions of Davey et al. include lithographic inks and electrographic toners (Davey et al., column 4, lines 17-19). The polyurethane compositions of Davey et al. are primers interposed between the polymeric sheet and an incompatible ink or which encapsulate the incompatible ink to bond the ink layer to the sheet (Davey et al. column 3, lines 19-24 and line 42).

Reconsideration and withdrawal of this rejection is respectfully requested.

The 35 U.S.C. §103 Rejection

The Examiner rejected claims 11-45 and 49-52 under 35 U.S.C. §103(a) as unpatentable over Davey et al. (U.S. Patent No. 5,162,141) in view of Hassell (U.S. Patent No. 4,334,530) and Miyamoto (European Patent No. 596 503). The cancellation of claims 14 and 15 renters the rejection of these claims moot. Applicants respectfully traverse the rejection of claims 11-13, 16-45, and 49-52.

The present invention recognizes that the integrity of an ink may be compromised when printing on an elastomeric surface (Specification, page 1, lines 23-25), and solves this problem with the disclosed method of applying urethane-polymer-containing ink compositions on an elastomeric substrate. While the substrates of Davey et al. do not specifically exclude elastomeric substrates, the specification and examples are drawn to use of the polyurethane primer compositions with rigid substrates intended for use as a decorative surface product for floors, walls, and furniture (Davey et al. column 3, lines 60-63 and Examples 1-4, columns 5-6). Davey et al. neither recognize nor solve the problem in the art solved by the present invention.

Further, there is no incentive for one skilled in the art to combine the teachings of Davey et al. with the teachings of either Hassell or EP 593 503 to provide Applicant's invention. Hassell provides an adhesive bandage with indicia printed thereon to indicate the direction the bandage should be peeled off for proper removal from flap-type wounds (Hassell, column 2, lines 9-13). The indicia are printed with "suitable inks" (Hassell, column 3, line 25). There is no incentive whatsoever for someone skilled in the art of applying inks to elastomeric substrates to look to art of surface products for floors, walls, and furniture, to obtain a urethane polymer-containing ink composition suitable for use on elastomeric surfaces, preferably elastomeric bandages. Furthermore, neither Hassell nor Davey et al. provide a method of coating an elastomeric substrate in an imagewise fashion with a urethane polymer-containing ink composition, as is provided by Applicants' invention.

Additionally, there is no incentive for one of skill in the art to combine the compositions of EP 593 503 with either Hassell and/or Davey et al. and reasonably expect that the methods and bandage of Applicants' present invention would be provided. EP 593 503 neither teach the application of urethane polymer-containing ink compositions on elastomeric substrates nor suggest that any of their polyurethane containing ink compositions could be successfully applied to an elastomeric substrate.

Applicants respectfully request reconsideration and withdrawal of the rejection.

Amendment and Response
Serial No.: 09/577,551
Confirmation No.: Unknown
Filed: 24 May 2000
For: ABRASION-RESISTANT INK COMPOSITIONS AND METHODSOF USE

Summary

It is respectfully submitted that the pending claims 11-13, 16-45, and 49-52 are in condition for allowance and notification to that effect is respectfully requested. The Examiner is invited to contact Applicants' Representatives, at the below-listed telephone number, if it is believed that prosecution of this application may be assisted thereby.

Respectfully submitted for
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CERTIFICATE UNDER 37 CFR §1.8:
The undersigned hereby certifies that this Facsimile Cover Sheet and the paper(s) as described hereinabove, are being transmitted by facsimile in accordance with 37 CFR §1.6(d) to the Patent and Trademark Office addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on this 4th day of March, 2002, at 6:50 pm (Central Time).

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APPENDIX A - SPECIFICATION/CLAIM AMENDMENTS INCLUDING NOTATIONS TO INDICATE CHANGES MADE
Serial No.: 09/577,551
Docket No.: 53481US009 (formerly 53481USA1B.009)

Amendments to the following are indicated by underlining what has been added and bracketing what has been deleted. Additionally, all amendments have been marked in bold typeface.

In the Claims

For convenience, all pending claims are shown below.

11. (AMENDED) A method for improving durability of an image on **[a flexible]** **an elastomeric** substrate comprising the step of:

coating **[a]** **an imagewise** layer of a urethane polymer-containing **ink** composition onto **[a flexible]** **an elastomeric** substrate **[suitable for printing an image]** wherein the urethane polymer comprises a number average molecular weight in the noncross-linked form of about 1,500 to about 50,000.

12. (AMENDED) The method of Claim 11 wherein the urethane polymer-containing **ink** composition is **[an ink]** **a water-based** composition comprising a dispersion of pigment.

13. The method of Claim 11 wherein the urethane polymer-containing compound further comprises a cross-linker to cross-link the urethane polymer.

14. (CANCEL)

15. (CANCEL)

16. (AMENDED) A method for printing an image on **[a flexible or]** **an** elastomeric substrate comprising the step of:

printing an image using at least one ink composition comprising a stable nonpolyethylene containing aqueous dispersion of pigment and particles of a urethane

polymer.

17. (AMENDED) The method of Claim 16 further comprising the step of coating a layer of a urethane polymer-containing composition onto the **[flexible or]** elastomeric substrate before the printing step.

18. The method of Claim 16 wherein the urethane polymer comprises a number average molecular weight in the noncross-linked form of about 1,500 to about 50,000.

19. The method of Claim 17 wherein the urethane polymer-containing compound of the coating step further comprises a cross-linker to cross-link the urethane polymer.

20. The method of Claim 16 wherein the ink composition further comprises a cross-linker to cross-link the urethane polymer.

21. The method of Claim 16 wherein the ink composition is provided in at least one layer of ink in the printed image.

22. (AMENDED) The method of Claim 16 wherein at least one **[of the]** ink composition comprises a dispersion of white pigment.

23. The method of Claim 16 wherein the at least one ink composition comprises at least one layer of ink in the image.

24. The method of Claim 16 wherein the at least one ink composition is in the last ink layer printed in the image.

25. A method for printing an image on an elastomeric substrate comprising the steps of:

printing a first layer of ink onto an elastomeric substrate, the first layer of ink comprising a stable aqueous dispersion of pigment and particles of a urethane polymer; and

printing an image over the first layer of ink wherein the last layer of ink, farthest from the substrate, comprises a stable aqueous dispersion of pigment and particles of a urethane polymer.

26. The method of Claim 25 wherein at least one layer of ink is printed using a nonaqueous-based ink.

27. The method of Claim 25 wherein the ink composition in the first layer of ink further comprises a cross-linker to cross-link the urethane polymer.

28. The method of Claim 25 wherein the first layer comprises an ink comprising a white pigment.

29. The method of Claim 25 wherein an opaque layer of white pigment is disposed between the first layer of ink and the image.

30. The method of Claim 25 wherein the image is printed with an ink composition comprising a stable aqueous dispersion of pigment and particles of a urethane polymer.

31. The method of Claim 25 wherein the last layer of ink, farthest from the substrate, further comprises a cross-linker to cross-link the urethane polymer.

32. The method of Claim 25 wherein the image is covered with a coating comprising a

backsize or sealer.

33. The method of Claim 25 wherein the sealer is a urethane polymer adhesive.

34. (AMENDED) The method of Claim 16 wherein the **[flexible or]** elastomeric substrate is formed as a bandage.

35. The method of Claim 34 wherein the bandage comprises the elastomeric substrate and an adsorbent pad.

36. The method of Claim 35 wherein the image is printed over the adsorbent pad.

37. (AMENDED) The method of Claim 34 wherein the **[flexible]** **elastomeric** substrate is selected from a group consisting of polyurethane, elastomeric polyethylene, low density polyethylene and a nonwoven elastomeric web.

38. The method of Claim 16 wherein the elastomeric substrate is formed as a balloon, label, sticker, elastomeric sheet, stretch band, temporary tattoo, or adhesive tape.

39. (AMENDED) A method for limiting abrasion of an ink on **[a flexible substrate]** **an elastomeric bandage** comprising the steps of:

applying **[a]** **at least one ink** composition comprising a water-based dispersion of a urethane polymer to **[a flexible]** **an elastomeric** surface**[;**

printing an image over the composition using at least one ink composition] **in an imagewise fashion**.

40. The method of Claim 39 wherein the composition is an ink composition comprising a

stable aqueous dispersion of pigment and particles of a urethane polymer and a cross-linker to cross-link the urethane polymer.

41. The method of Claim 39 wherein the at least one ink composition of the printing step comprises a stable aqueous dispersion of pigment and particles of a urethane polymer and a cross-linker to cross-link the urethane polymer.

42. The method of Claim 39 wherein the printing step is selected from the group consisting of rotogravure printing, flexographic printing and offset printing.

43. (AMENDED) The method of Claim 39 wherein the **[flexible]** **elastomeric** substrate is selected from a group consisting of polyurethane, elastomeric polyethylene, low density polyethylene, and a nonwoven elastomeric web.

44. The method of Claim 39 wherein the composition comprises a water-based pigment.

45. The method of Claim 39 wherein the water-based pigment is a white pigment.

49. An elastomeric bandage comprising a printed image wherein the printed image is prepared from at least one ink composition comprising a stable aqueous dispersion of pigment and particles of a urethane polymer.

50. The elastomeric bandage of Claim 49 wherein the at least one ink composition further comprises a cross-linker to cross-link the urethane polymer.

51. The elastomeric bandage of Claim 49 wherein the bandage further comprises a pad.

52. The elastomeric bandage of Claim 51 wherein the image is printed over the pad.